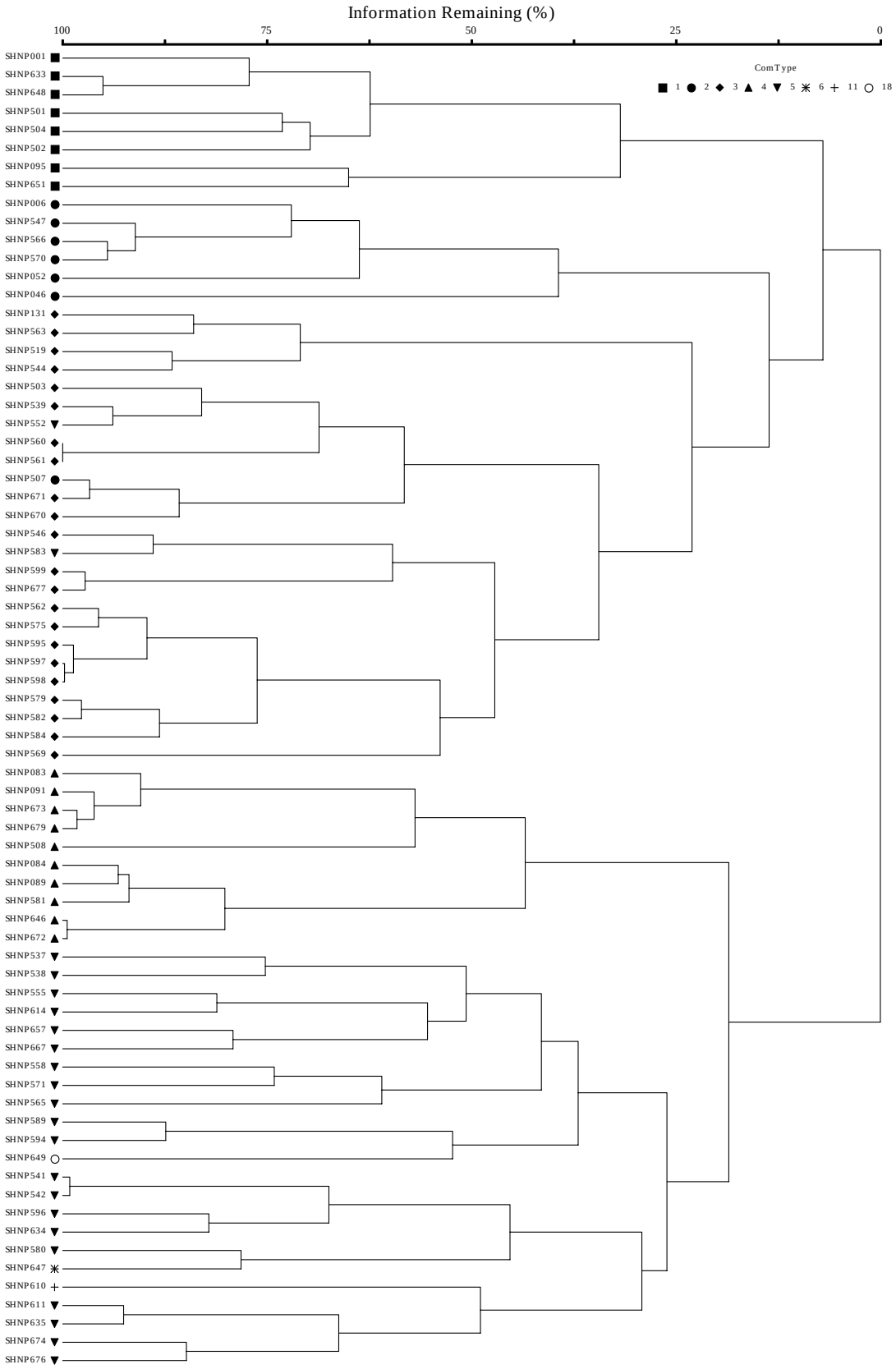
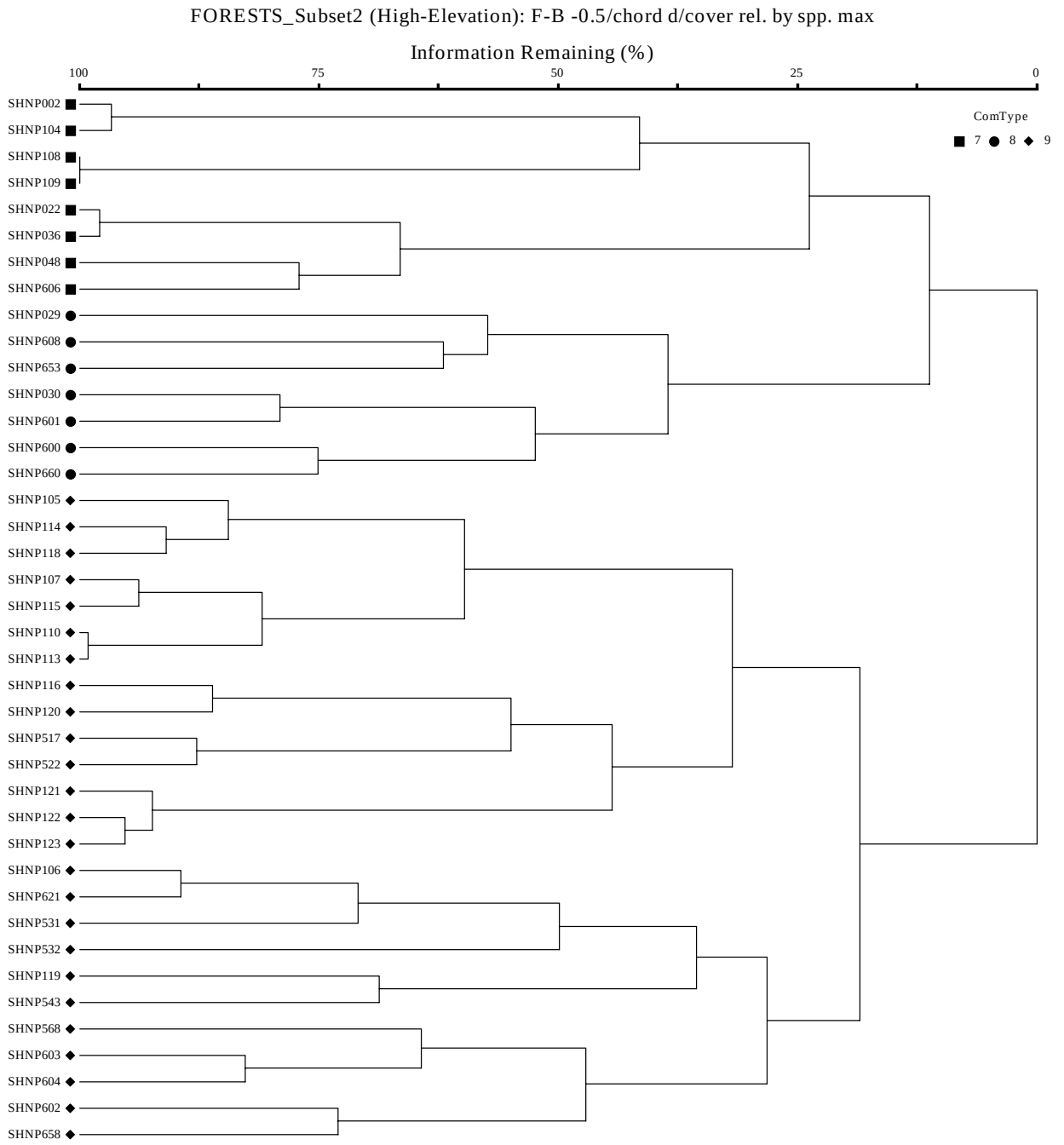
FORESTS_Subset 1 (Acidic): Flex-Beta / -0.5b / Bray-Curtis / raw cover

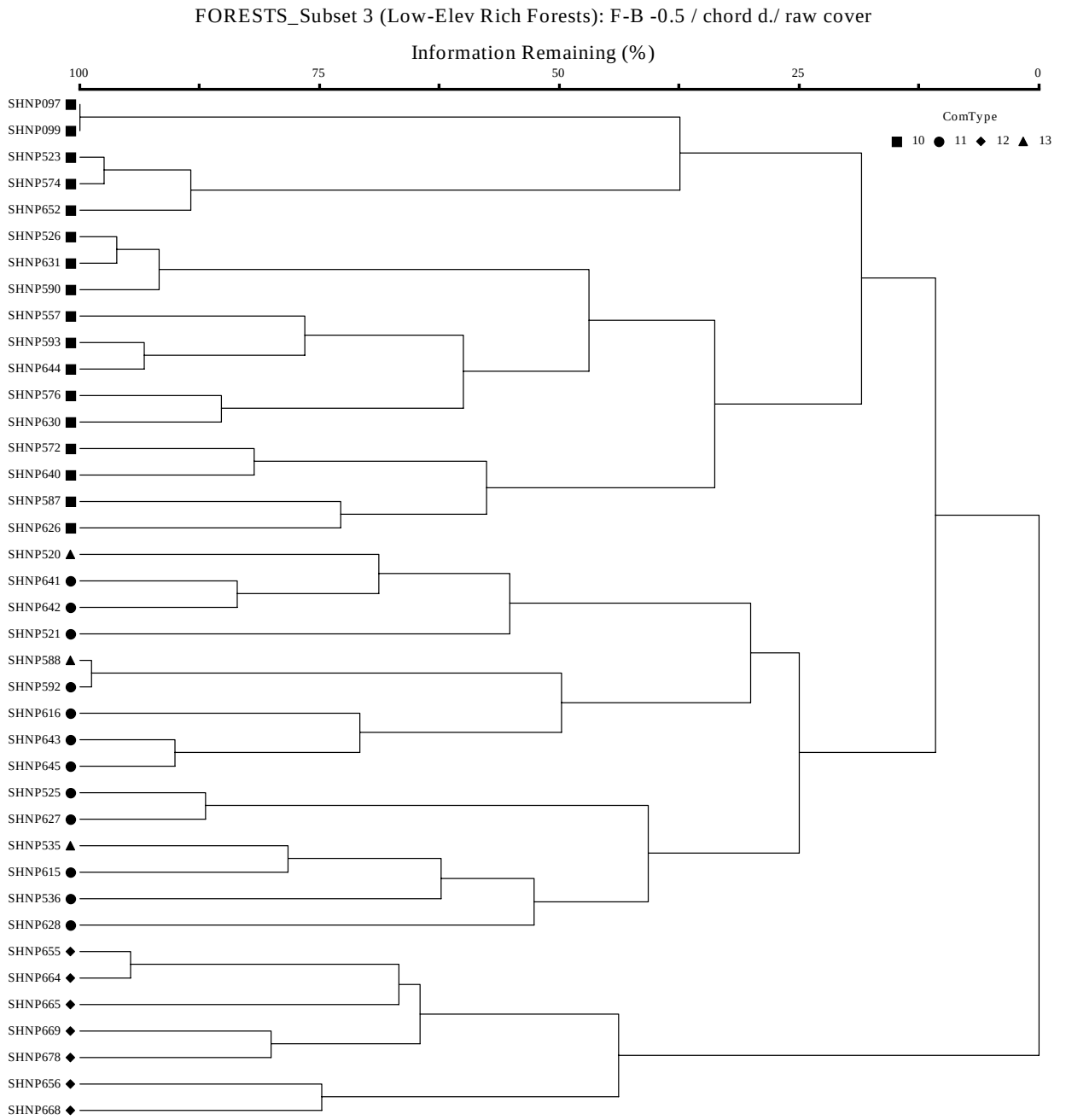


KEY TO COMMUNITY TYPES:

1 – Central Appalachian Pine-Oak/Heath Woodland
2 – Chestnut Oak – Black Birch Wooded Talus Slope
3 – Central Appalachian/Northern Piedmont Low-Elevation Chestnut Oak Forest
4 – Mixed Oak/Heath Forest (Low-Elevation White Oak-Scarlet Oak-Black Oak Type)
5 – Central Appalachian Dry-Mesic Chestnut Oak-Northern Red Oak Forest (see also Forests_Subset 4 dendrogram)
6 – Mid-Atlantic Mesic Mixed Hardwood Forest
11 – Northern Blue Ridge Montane Alluvial Forest (see Forests_Subset 3 dendrogram)
18 – Central Appalachian Acidic Oak-Hickory Forest (see Forests_Subset 4 dendrogram)

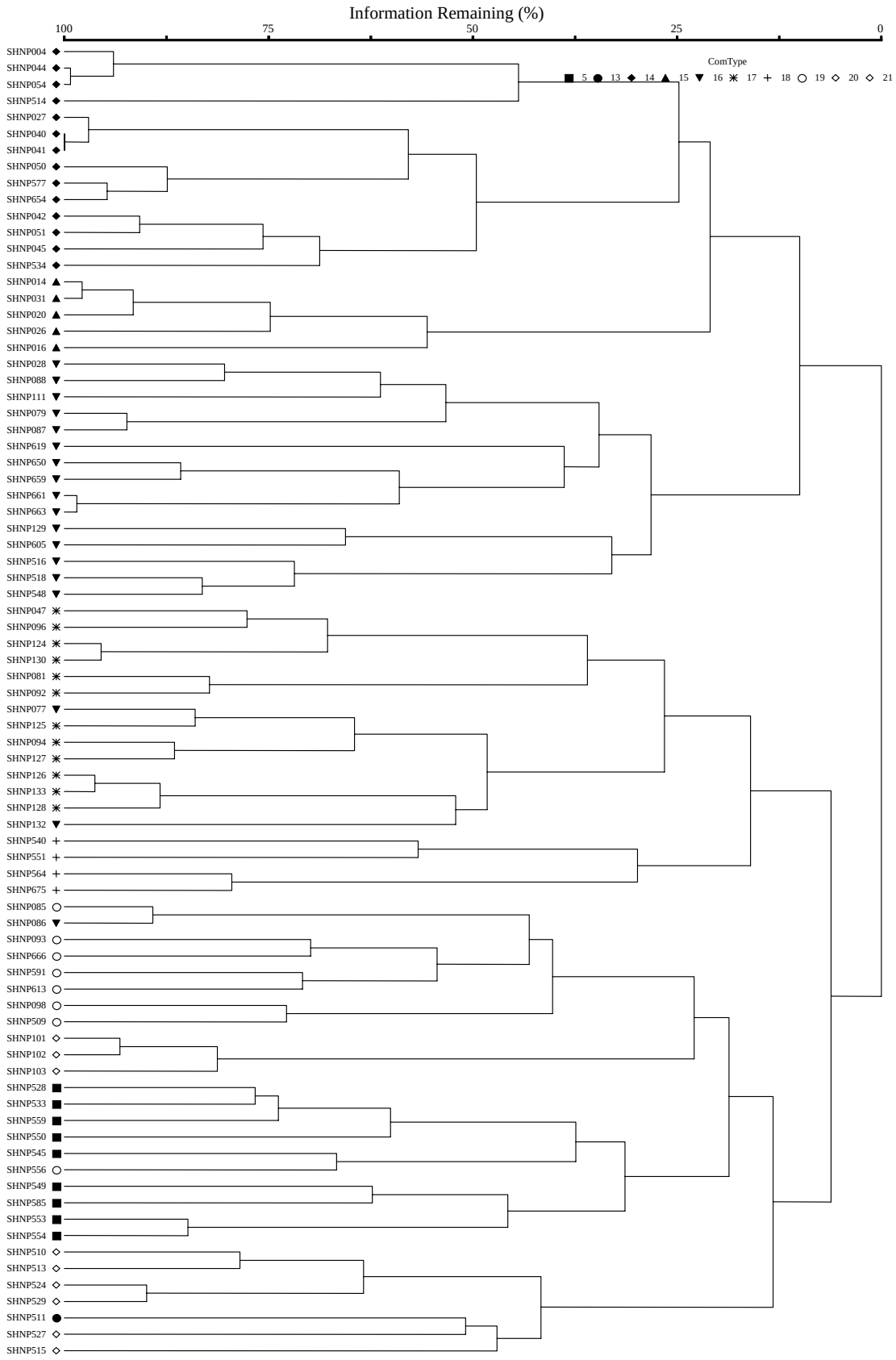


KEY TO COMMUNITY TYPES:
7 – Central Appalachian Northern Hardwood Forest (Yellow Birch – Northern Red Oak Type)
8 – Hemlock – Northern Hardwood Forest
9 – Northern Red Oak Forest (Pennsylvania Sedge – Wavy Hairgrass Type)



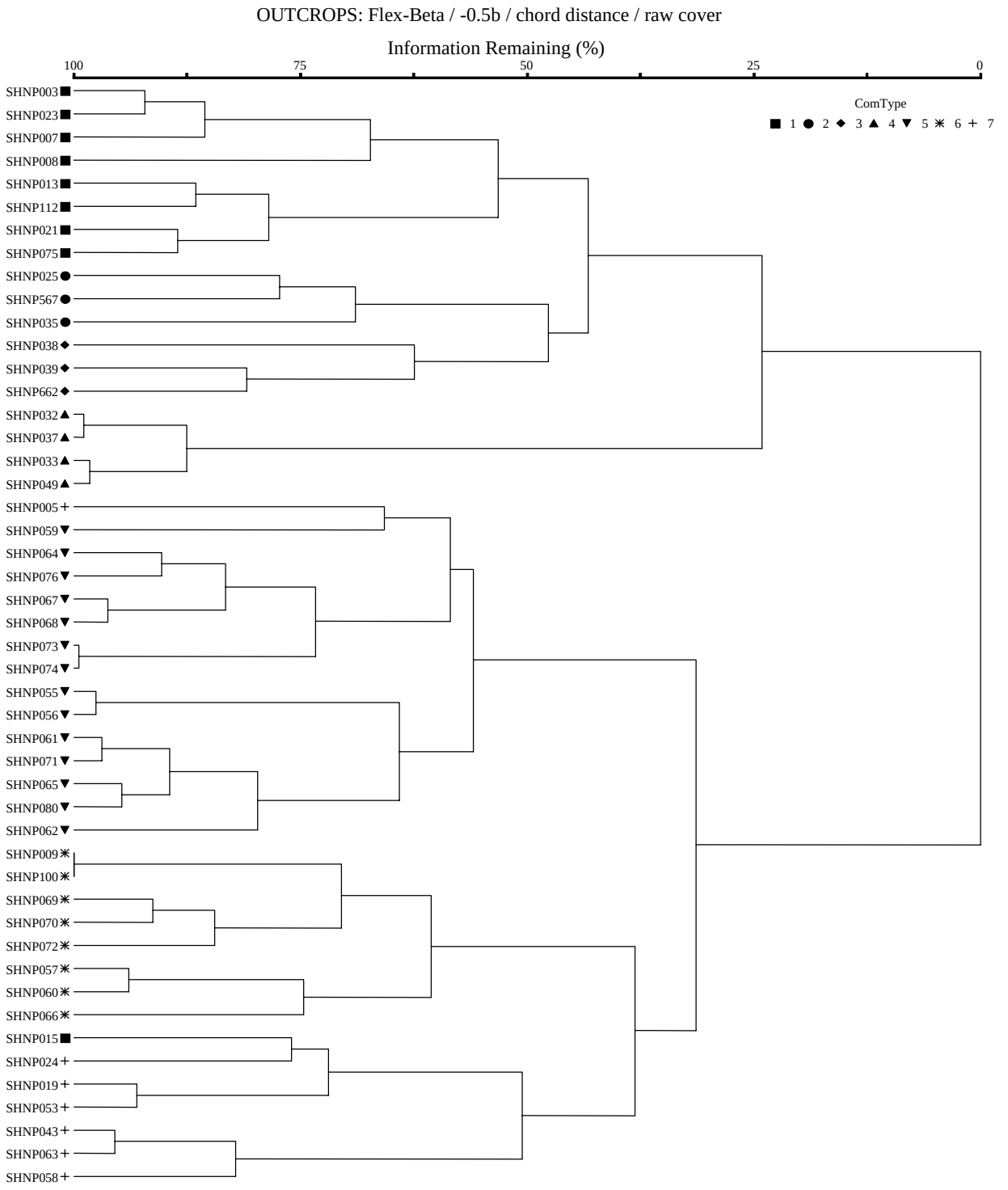
KEY TO COMMUNITY TYPES:
10 – Southern Appalachian Cove Forest (Typic Montane Type)
11 – Northern Blue Ridge Montane Alluvial Forest
12 – Central Appalachian Acidic Cove Forest (White Pine – Mixed Hardwoods Type)
13 – Successional Tuliptree Forest (Circumneutral Type)

FORESTS_Subset4 (Mixed): Flex-Beta / -0.5b / chord d./ cover rel. by spp. max



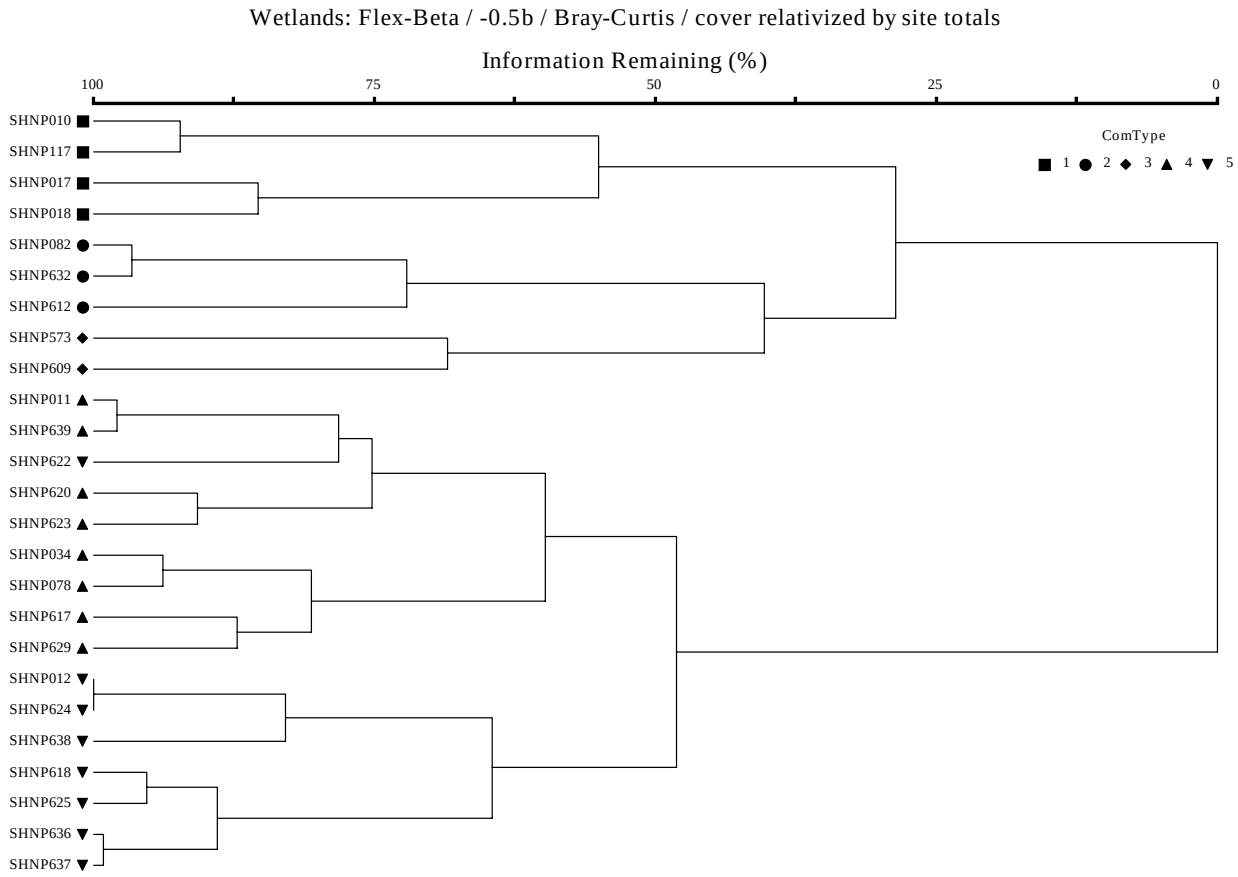
KEY TO COMMUNITY TYPES:

5 – Central Appalachian Dry-Mesic Chestnut Oak-Northern Red Oak Forest (see also FORESTS_Subset 1 dendrogram)
13 – Successional Tuliptree Forest (Circumneutral Type) (see also FORESTS_Subset 3 dendrogram)
14 – Central Appalachian Basic Boulderfield Forest (Montane Basswood – White Ash Type)
15 – Central Appalachian Rich Cove Forest
16 – Central Appalachian Montane Oak-Hickory Forest (Basic Type)
17 – Central Appalachian Montane Oak-Hickory Forest (Acidic Type)
18 – Central Appalachian Acidic Oak-Hickory Forest (see also FORESTS_Subset 1 dendrogram)
19 – Central Appalachian Basic Oak-Hickory Forest (Submontane/Foothills Type)
20 – Northern Hardpan Basic Oak-Hickory Forest
21 – Black Locust Successional Forest

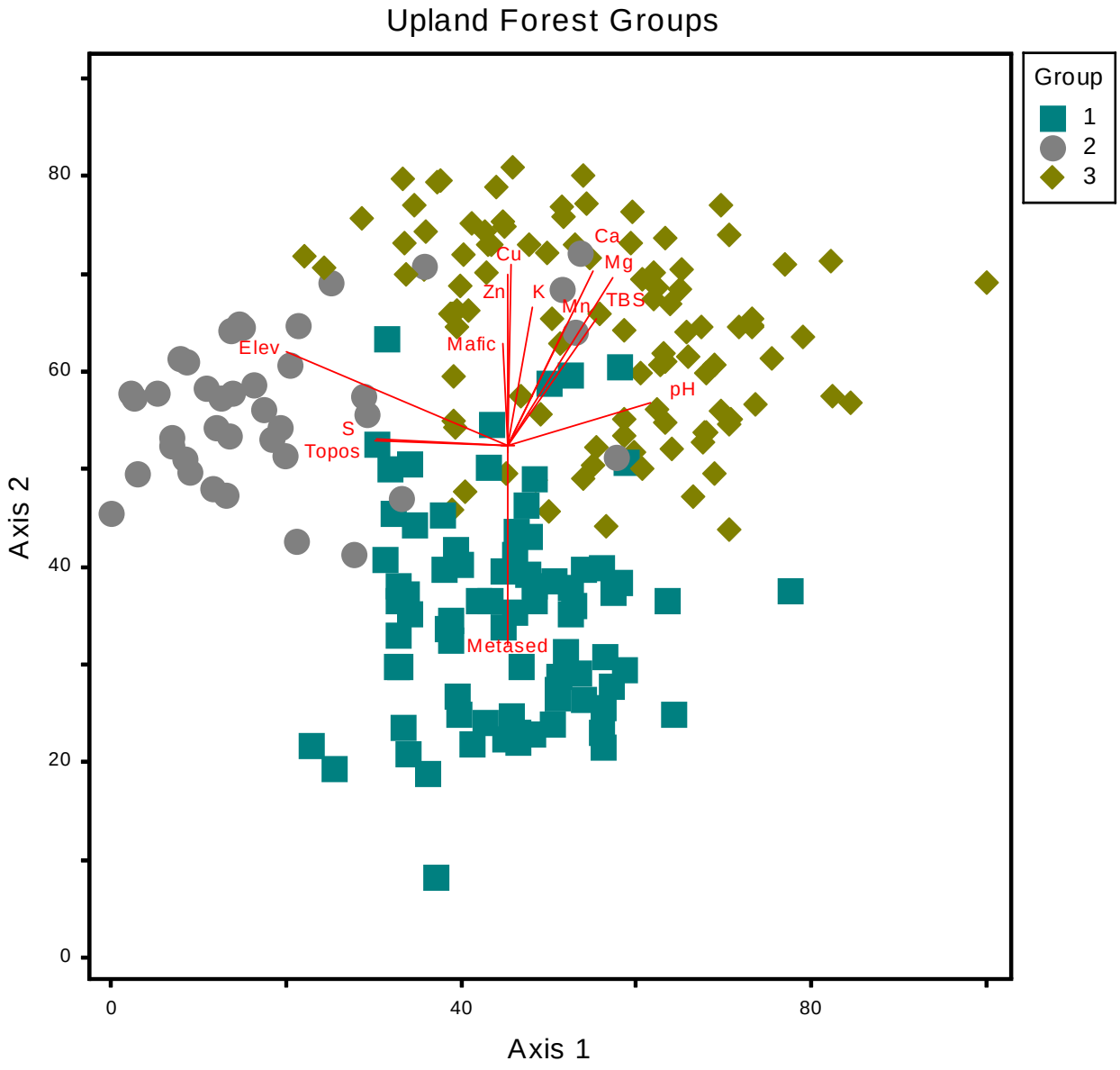


KEY TO COMMUNITY TYPES:

1 – High-Elevation Greenstone Barren
2 – High-Elevation Heath Barren / Pavement
3 – High-Elevation Outcrop Barren (Black Chokeberry Igneous / Metamorphic Type)
4 – Central Appalachian High-Elevation Boulderfield Forest
5 – Central Appalachian Basic Woodland
6 – Central Appalachian Circumneutral Barren
7 – Central Appalachian Mafic Barren (Ninebark / Pennsylvania Sedge Type)



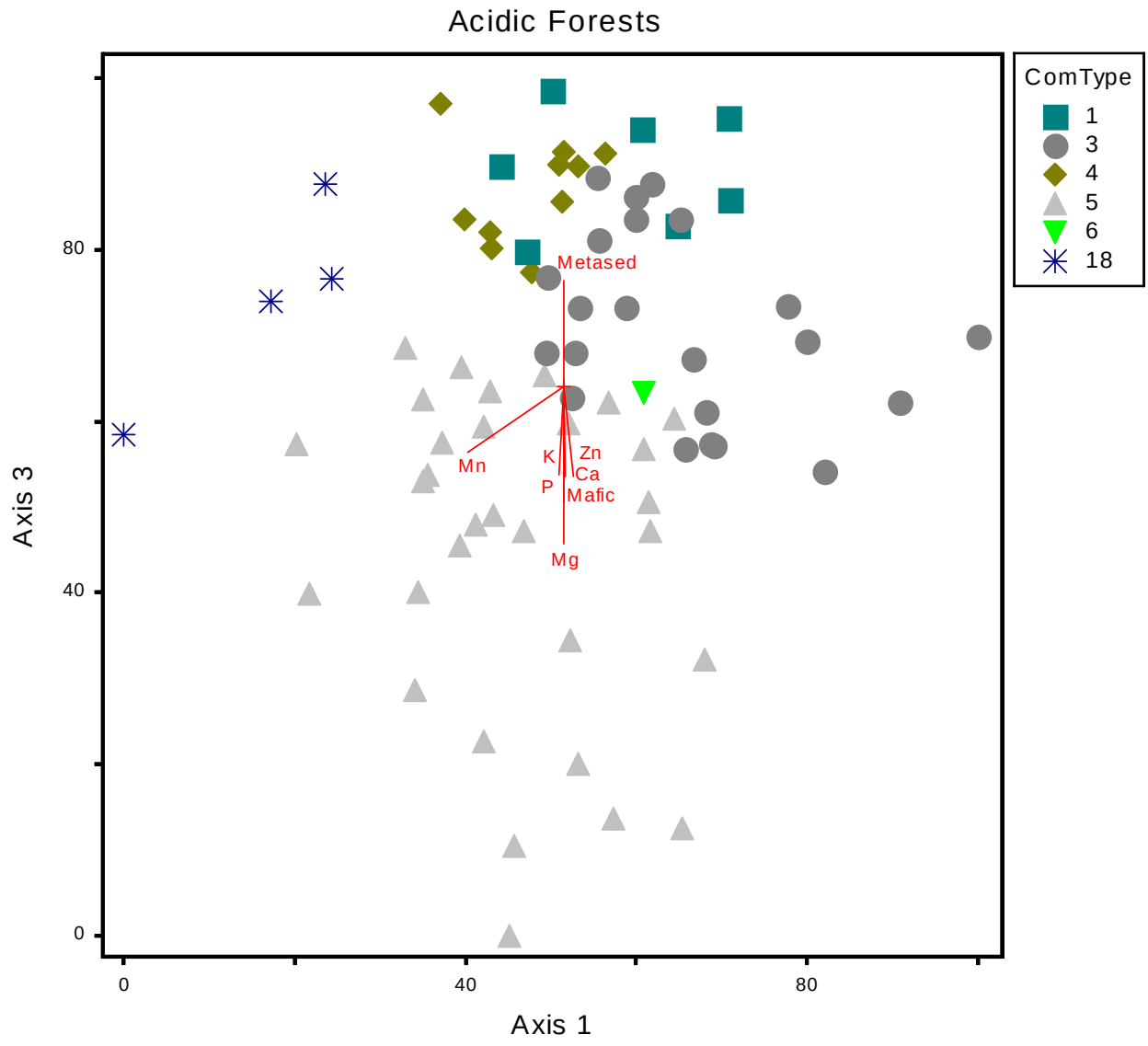
KEY TO COMMUNITY TYPES:
1 – Northern Blue Ridge Mafic Fen
2 – Central Appalachian Acidic Seepage Swamp
3 – Central Appalachian Woodland Seep
4 – Central Appalachian Basic Seepage Swamp
5 – High-Elevation Hemlock – Yellow Birch Seepage Swamp
(6 – Shenandoah Valley Sinkhole Pond is represented by a single plot and not included in the dendrogram)



Scatterplot diagram for three-dimensional NMDS ordination of SHNP upland forest plots, showing the distribution of three major vegetation groups on the first and second axes:

1 – pine-oak/heath, oak/heath, and acidic boulderfield forests
2 – northern hardwood, northern red oak, and eastern hemlock-hardwood forests
3 – mesic and dry-mesic mixed forests

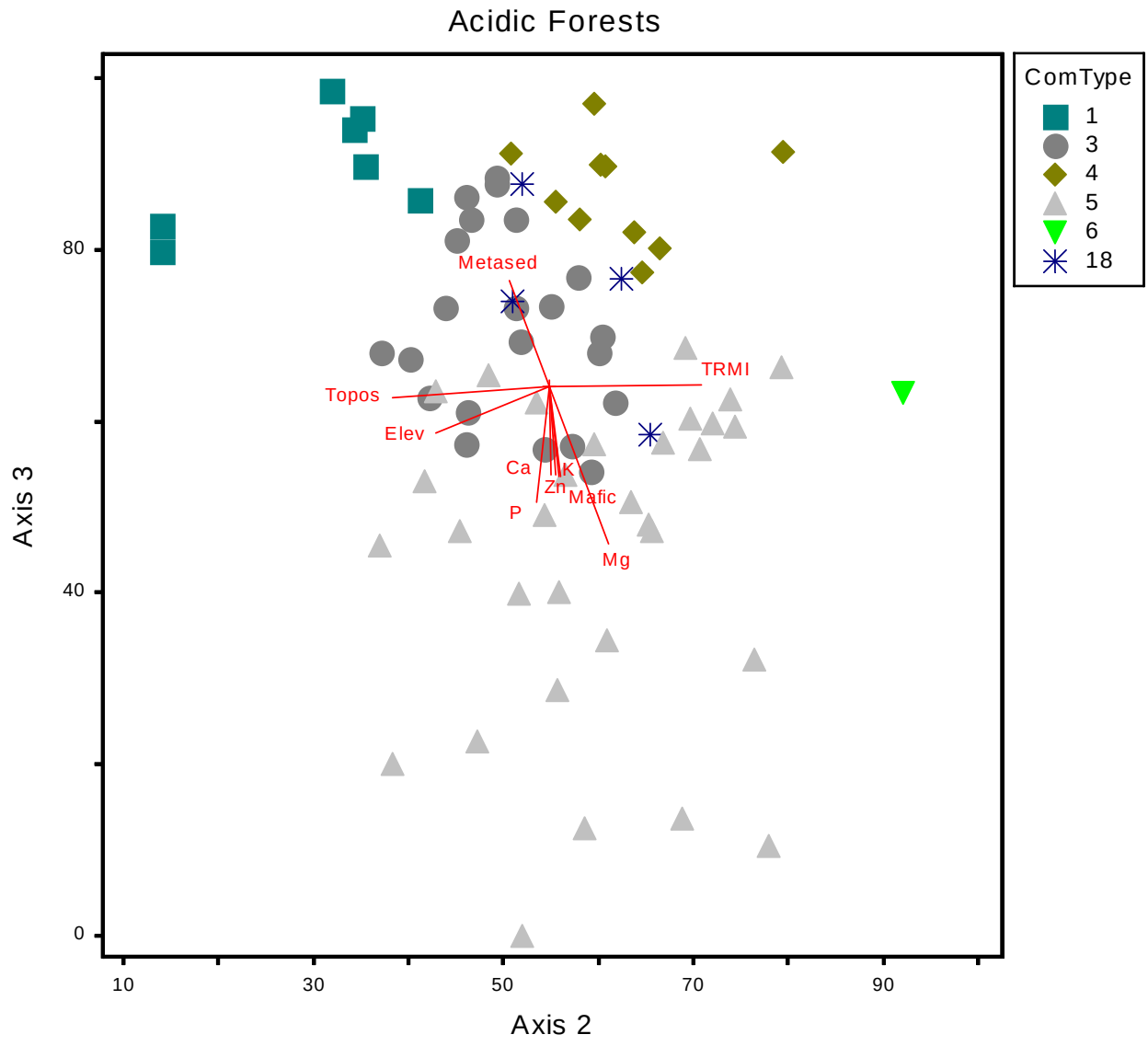
Joint plot vectors show significant correlations between compositional variation and soil/topographic variables ($p = <0.001$). See p. 25 for definition of environmental variables.



Scatterplot diagram for three-dimensional NMDS ordination of SHNP acidic forest plots, showing the distribution of community types on the first and third axes:

F1 – Central Appalachian Pine-Oak/Heath Woodland
F3 – Central Appalachian/Northern Piedmont Low-Elevation Chestnut Oak Forest
F4 – Mixed Oak/Heath Forest (Low-Elevation White Oak-Scarlet Oak-Black Oak Type)
F5 – Central Appalachian Dry-Mesic Chestnut Oak-Northern Red Oak Forest
F6 – Mid-Atlantic Mesic Mixed Hardwood Forest
F18 – Central Appalachian Acidic Oak-Hickory forest

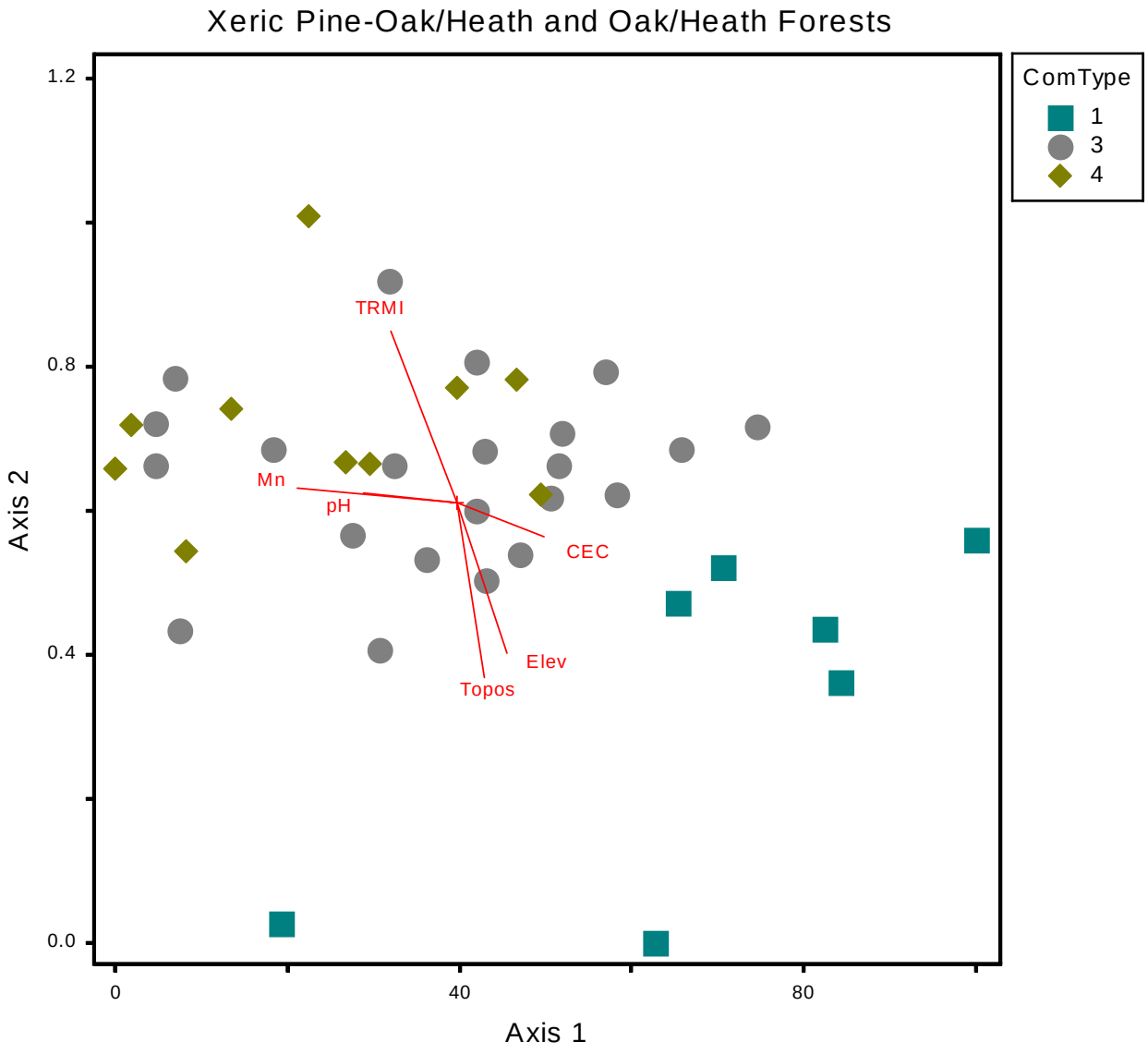
Joint plot vectors show significant correlations between compositional variation and soil/topographic variables ($p = <0.001$). See p. 25 for definition of environmental variables.



Scatterplot diagram for three-dimensional NMDS ordination of SHNP acidic forest plots, showing the distribution of community types on the second and third axes:

F1 – Central Appalachian Pine-Oak/Heath Woodland
F3 – Central Appalachian/Northern Piedmont Low-Elevation Chestnut Oak Forest
F4 – Mixed Oak/Heath Forest (Low-Elevation White Oak-Scarlet Oak-Black Oak Type)
F5 – Central Appalachian Dry-Mesic Chestnut Oak-Northern Red Oak Forest
F6 – Mid-Atlantic Mesic Mixed Hardwood Forest
F18 – Central Appalachian Acidic Oak-Hickory forest

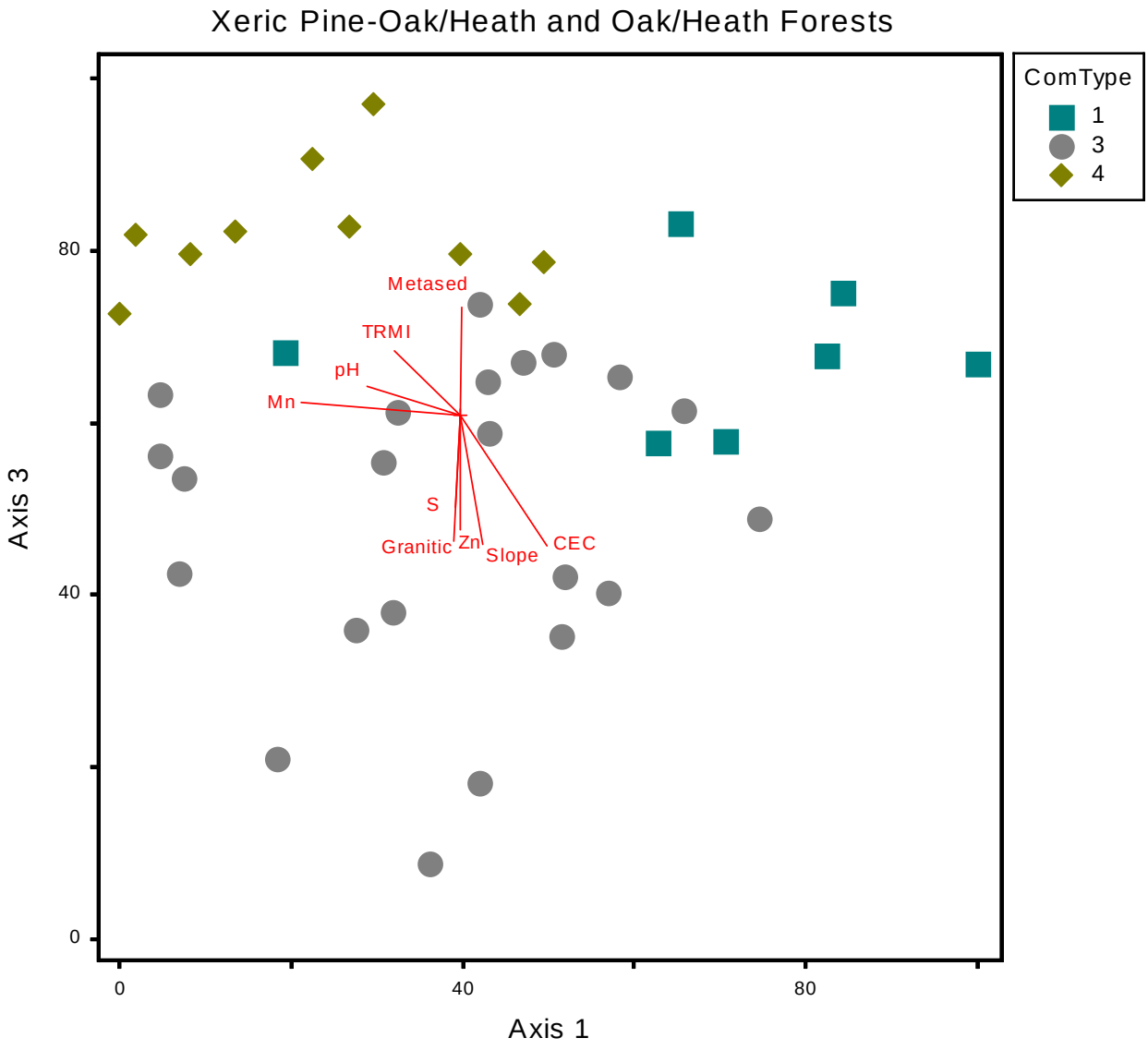
Joint plot vectors show significant correlations between compositional variation and soil/topographic variables ($p = <0.001$). See P. 25 for definition of environmental variables.



Scatterplot diagram for three-dimensional NMDS ordination of SHNP xeric pine-oak/heath and oak/heath forest plots, showing the distribution of community types on the first and second axes:

F1 – Central Appalachian Pine-Oak/Heath Woodland
F3 – Central Appalachian/Northern Piedmont Low-Elevation Chestnut Oak Forest
F4 – Mixed Oak/Heath Forest (Low-Elevation White Oak-Scarlet Oak-Black Oak Type)

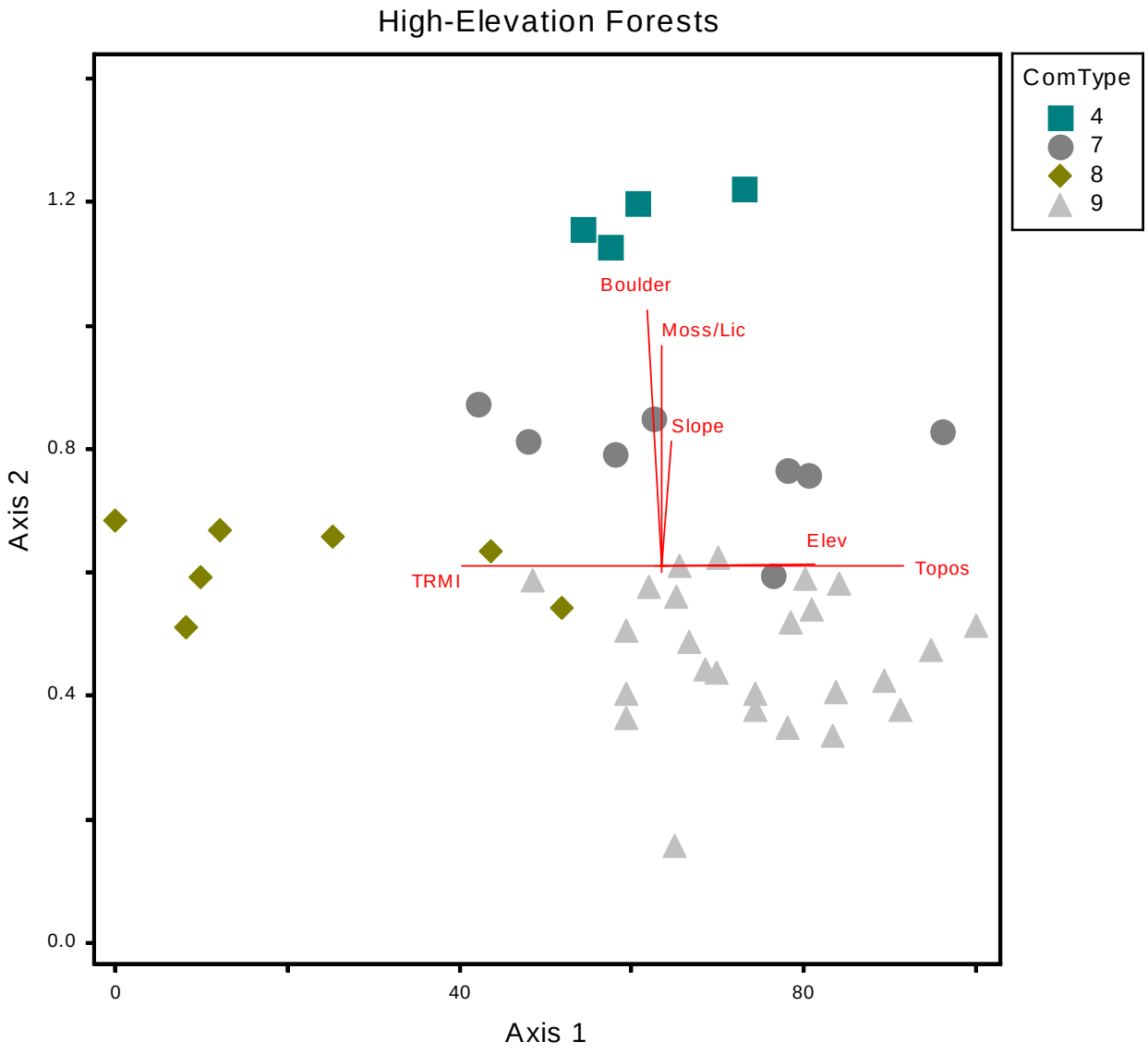
Joint plot vectors show significant correlations between compositional variation and soil/topographic variables ($p = <0.01$). See P. 25 for definition of environmental variables.



Scatterplot diagram for three-dimensional NMDS ordination of SHNP xeric pine oak/heath and oak/heath forest plots, showing the distribution of community types on the first and third axes:

F1 – Central Appalachian Pine-Oak/Heath Woodland
F3 – Central Appalachian/Northern Piedmont Low-Elevation Chestnut Oak Forest
F4 – Mixed Oak/Heath Forest (Low-Elevation White Oak-Scarlet Oak-Black Oak Type)

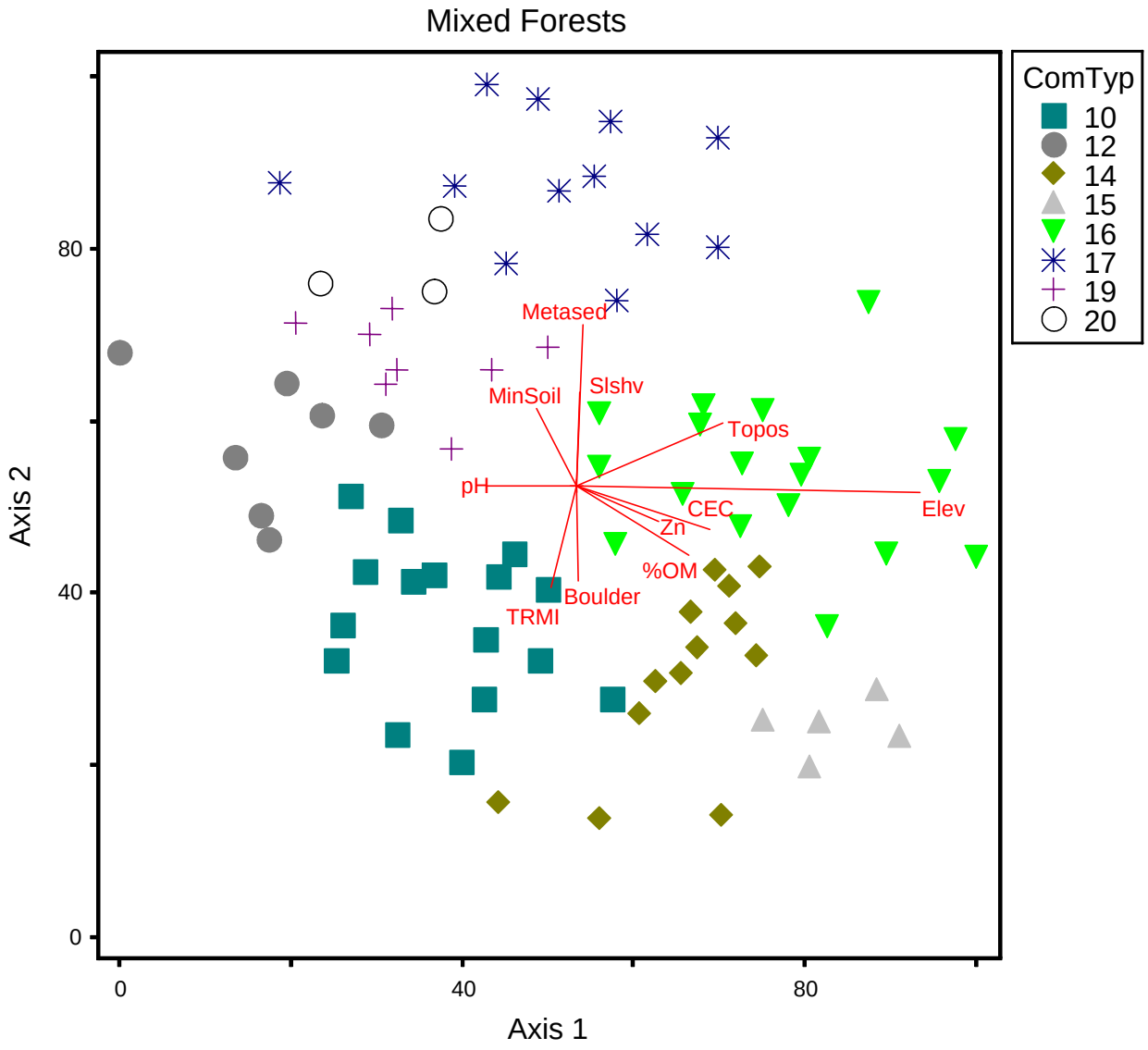
Joint plot vectors show significant correlations between compositional variation and soil/topographic variables ($p = <0.01$). See P. 25 for definition of environmental variables.



Scatterplot diagram for three-dimensional NMDS ordination of SHNP high-elevation forest plots, showing the distribution of community types on the first and second axes:

O4 – Central Appalachian High-Elevation Boulderfield Forest
F7 – Central Appalachian Northern Hardwood Forest (Yellow Birch-Northern Red Oak Type)
F8 – Hemlock-Northern Hardwood Forest
F9 – Northern Red Oak Forest (Pennsylvania Sedge-Wavy Hairgrass Type)

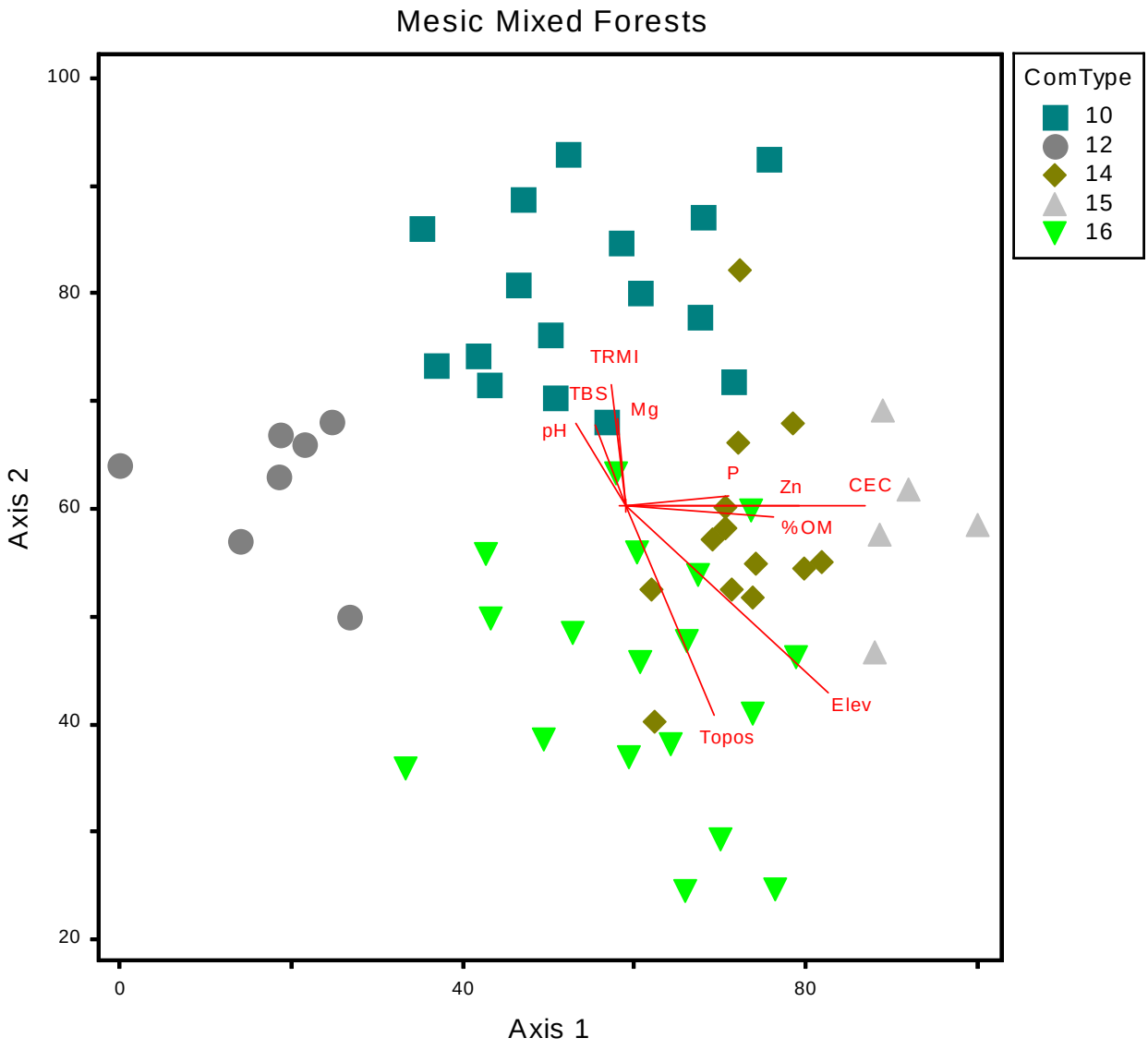
Joint plot vectors show significant correlations between compositional variation and topographic variables ($p = <0.01$). Because soil could not be collected from some plots, no soil chemistry variables are included. See P. 25 for definition of environmental variables.



Scatterplot diagram for two-dimensional NMDS ordination of SHNP mesic and dry-mesic mixed forest plots, showing the distribution of community types:

F10 – Southern Appalachian Cove Forest (Typic Montane Type)
F12 – Central Appalachian Acidic Cove Forest (White Pine-Mixed Hardwoods Type)
F14 – Central Appalachian Basic Boulderfield Forest (Montane Basswood-White Ash Type)
F15 – Central Appalachian Rich Cove Forest
F16 – Central Appalachian Montane Oak-Hickory Forest (Basic Type)
F17 – Central Appalachian Montane Oak-Hickory Forest (Acidic Type)
F19 – Central Appalachian Basic Oak-Hickory Forest (Submontane/Foothills Type)
F20 – Northern Hardpan Basic Oak-Hickory Forest

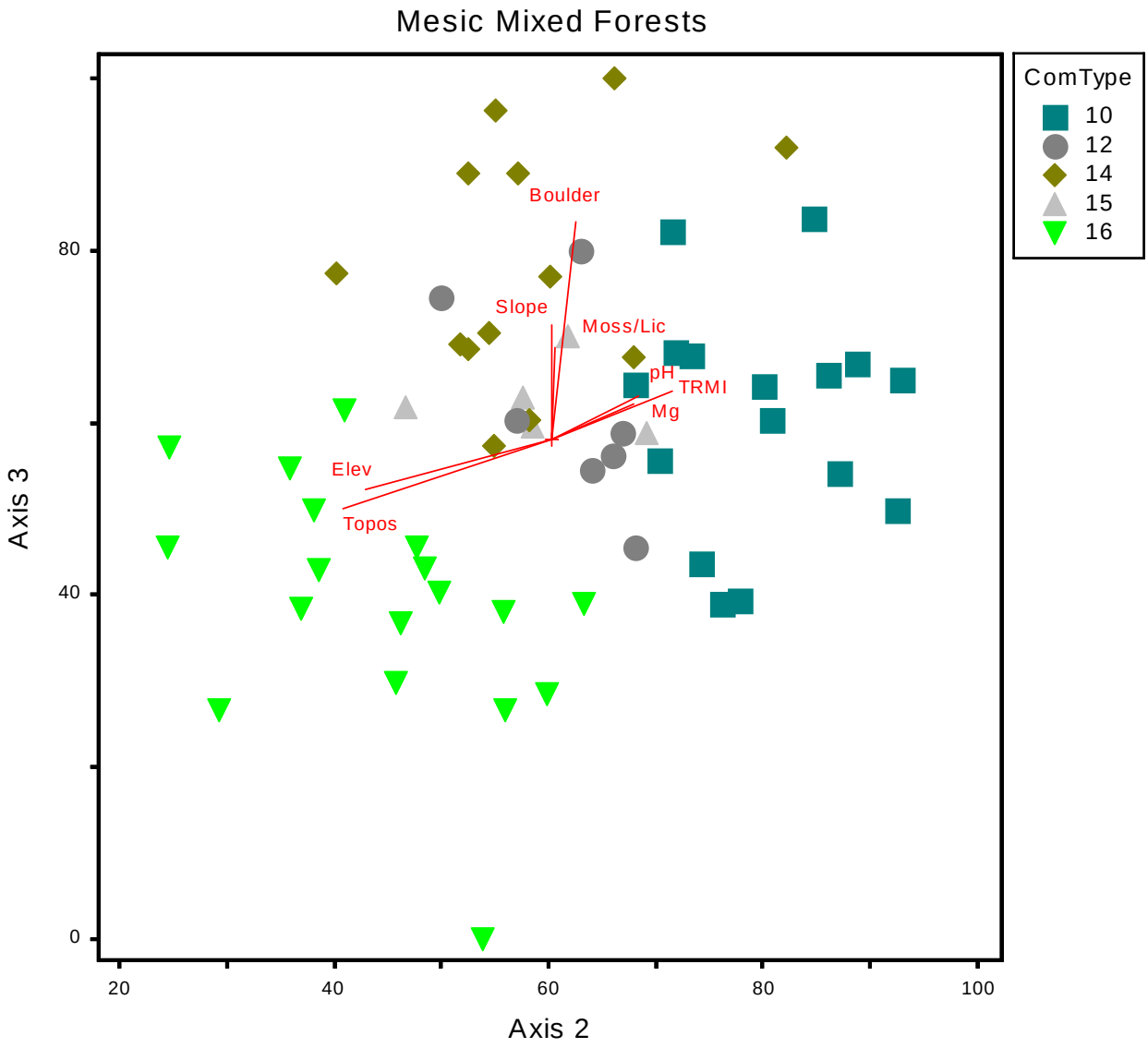
Joint plot vectors show significant correlations between compositional variation and soil/topographic variables ($p = <0.001$). See P. 25 for definition of environmental variables.



Scatterplot diagram for three-dimensional NMDS ordination of SHNP mesic mixed forest plots, showing the distribution of community types on the first and second axes:

F10 – Southern Appalachian Cove Forest (Typic Montane Type)
F12 – Central Appalachian Acidic Cove Forest (White Pine-Mixed Hardwood Type)
F14 – Central Appalachian Basic Boulderfield Forest (Montane Basswood-White Ash Type)
F15 – Central Appalachian Rich Cove Forest
F16 – Central Appalachian Montane Oak-Hickory Forest (Basic Type)

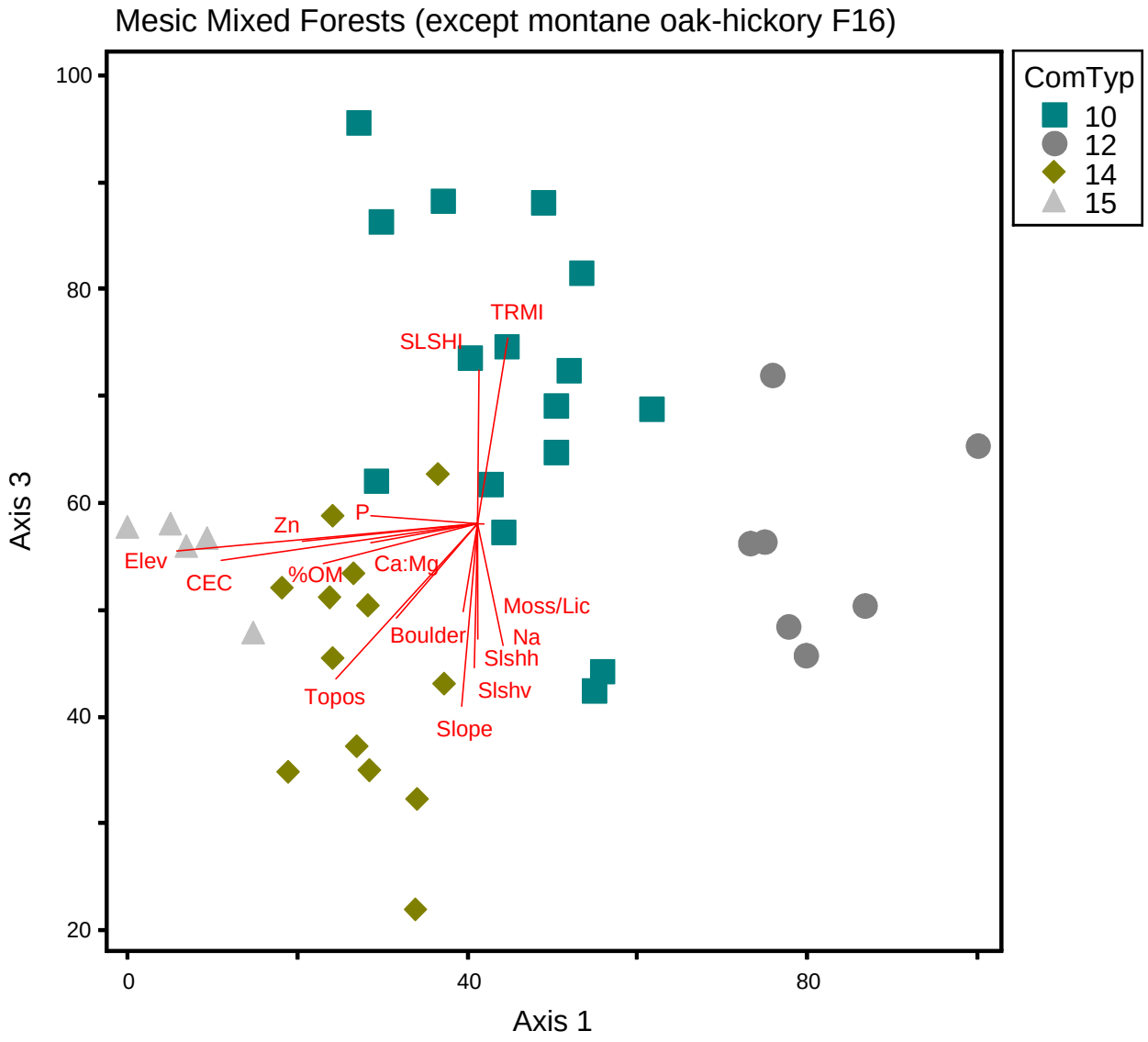
Joint plot vectors show significant correlations between compositional variation and soil/topographic variables ($p = <0.001$). See P. 25 for definition of environmental variables.



Scatterplot diagram for three-dimensional NMDS ordination of SHNP mesic mixed forest plots, showing the distribution of community types on the second and third axes:

F10 – Southern Appalachian Cove Forest (Typic Montane Type)
F12 – Central Appalachian Acidic Cove Forest (White Pine-Mixed Hardwood Type)
F14 – Central Appalachian Basic Boulderfield Forest (Montane Basswood-White Ash Type)
F15 – Central Appalachian Rich Cove Forest
F16 – Central Appalachian Montane Oak-Hickory Forest (Basic Type)

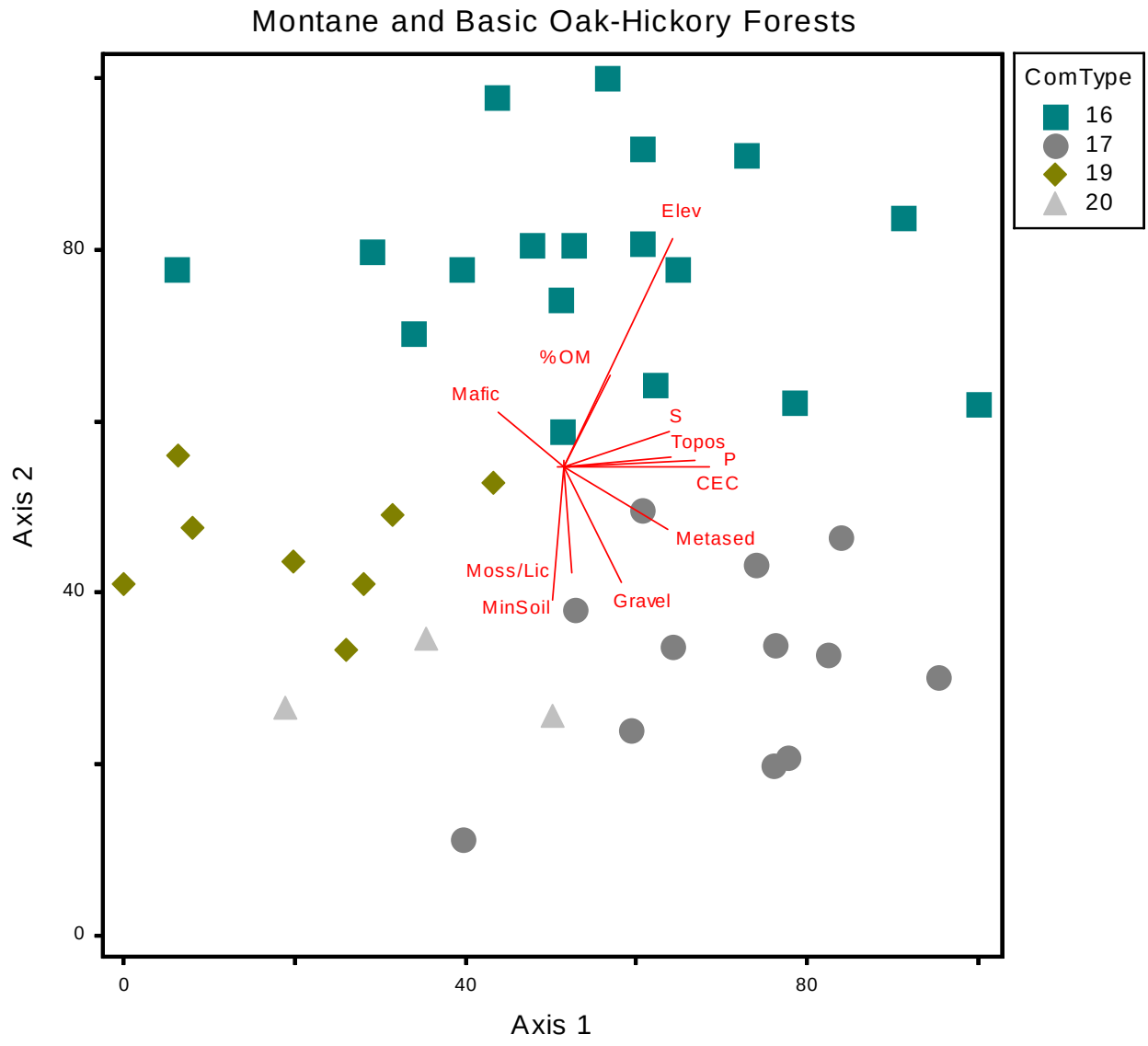
Joint plot vectors show significant correlations between compositional variation and soil/topographic variables ($p = <0.001$). See P. 25 for definition of environmental variables.



Scatterplot diagram for three-dimensional NMDS ordination of SHNP mesic mixed forest plots (except the Montane Oak Hickory Forest F16), showing the distribution of community types on the first and third axes:

F10 – Southern Appalachian Cove Forest (Typic Montane Type)
F12 – Central Appalachian Acidic Cove Forest (White Pine-Mixed Hardwood Type)
F14 – Central Appalachian Basic Boulderfield Forest (Montane Basswood-White Ash Type)
F15 – Central Appalachian Rich Cove Forest

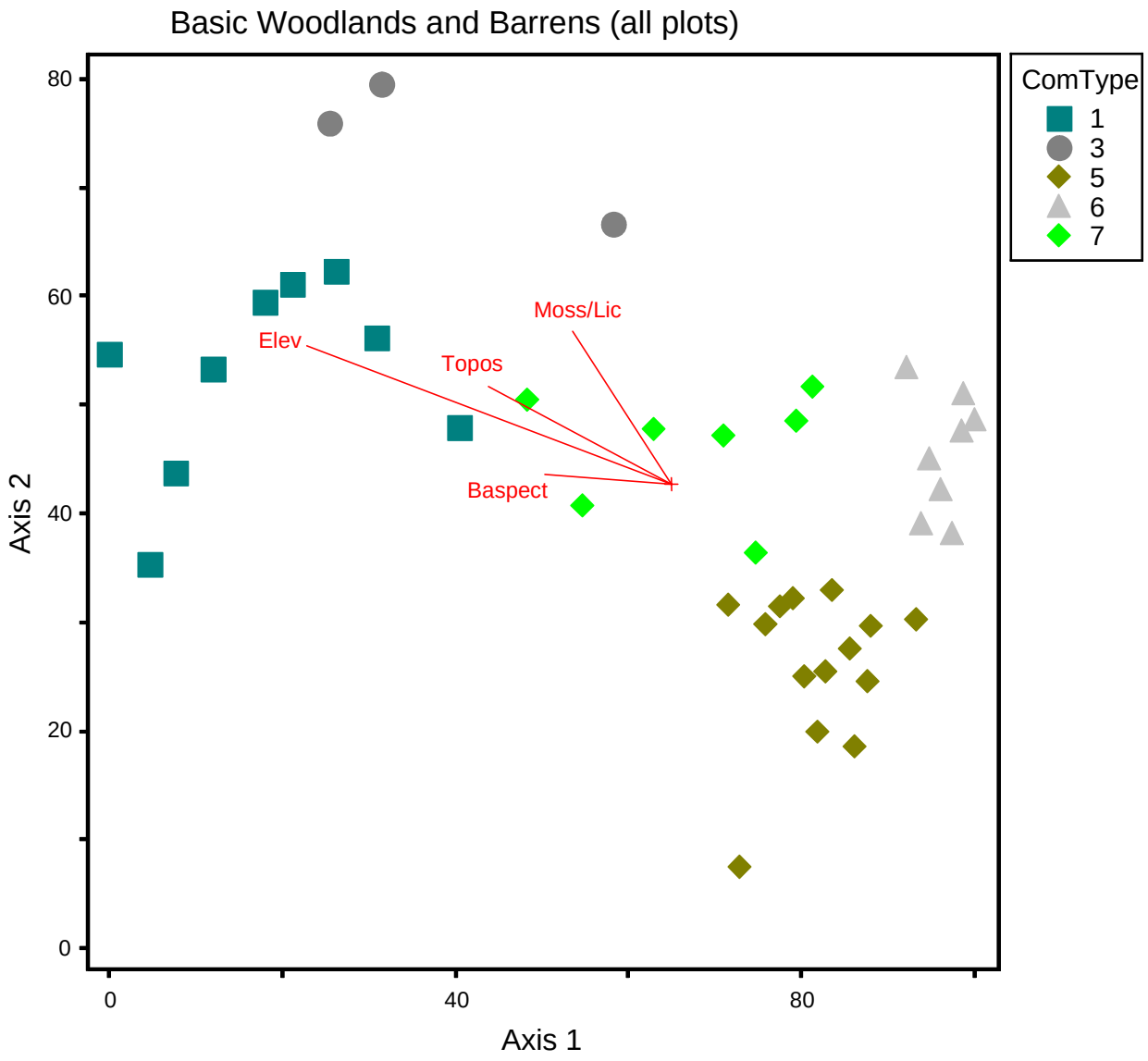
Joint plot vectors show significant correlations between compositional variation and soil/topographic variables ($p = <0.01$). See P. 25 for definition of environmental variables.



Scatterplot diagram for two-dimensional NMDS ordination of SHNP montane and basic oak-hickory forest plots, showing the distribution of community types:

F16 – Central Appalachian Montane Oak-Hickory Forest (Basic Type)
F17 – Central Appalachian Montane Oak-Hickory Forest (Acidic Type)
F19 – Central Appalachian Basic Oak-Hickory Forest (Submontane/Foothills Type)
F20 – Northern Hardpan Basic Oak-Hickory Forest

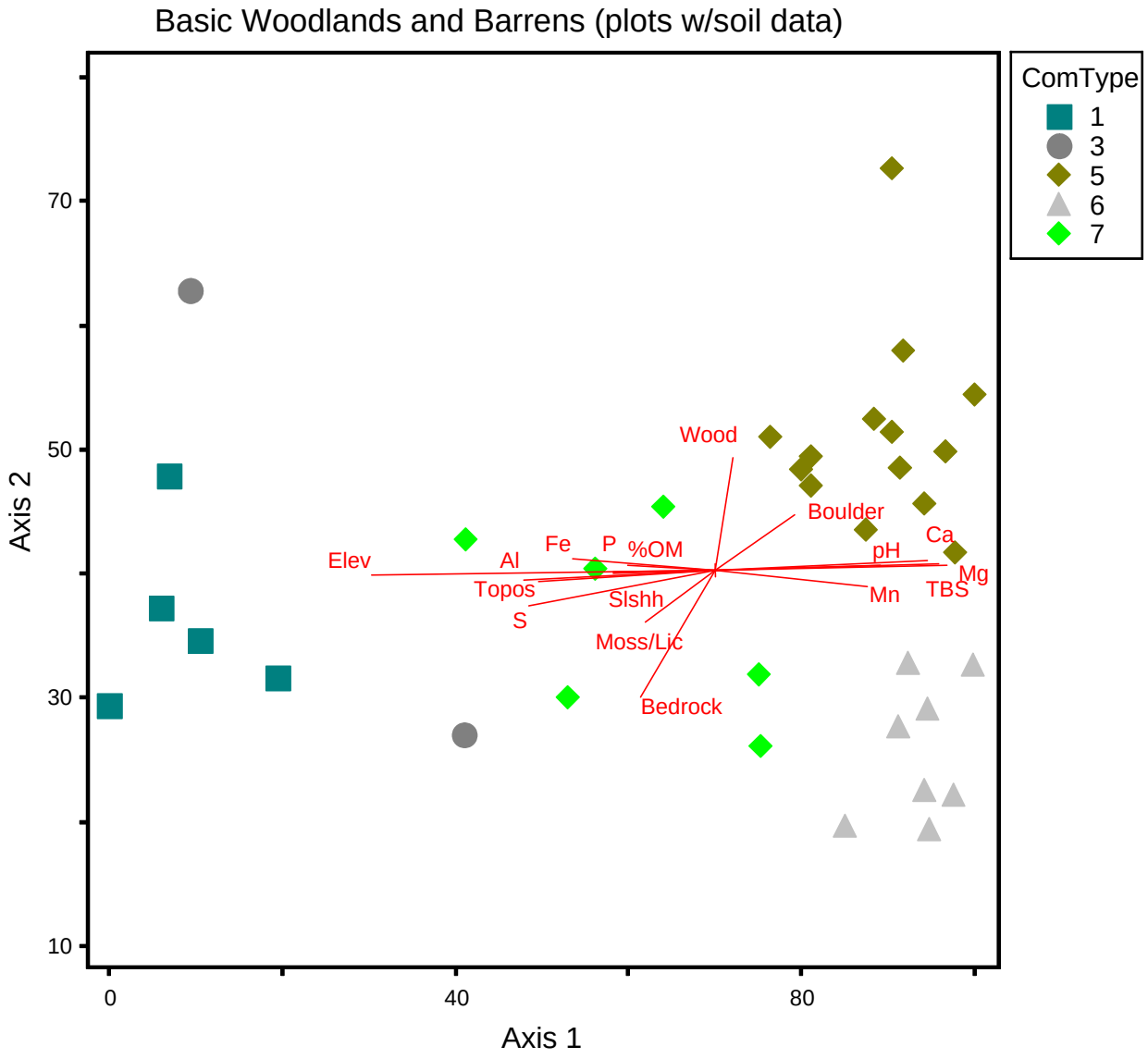
Joint plot vectors show significant correlations between compositional variation and soil/topographic variables ($p = <0.01$). See P. 25 for definition of environmental variables.



Scatterplot diagram for two-dimensional NMDS ordination of all SHNP basic woodland and outcrop barren plots, showing the distribution of community types:

O1 – High-Elevation Greenstone Barren
O3 – High-Elevation Outcrop Barren (Black Chokeberry Igneous/Metamorphic Type)
O5 – Central Appalachian Basic Woodland
O6 – Central Appalachian Circumneutral Barren
O7 – Central Appalachian Mafic Barren (Ninebark/Pennsylvania Sedge Type)

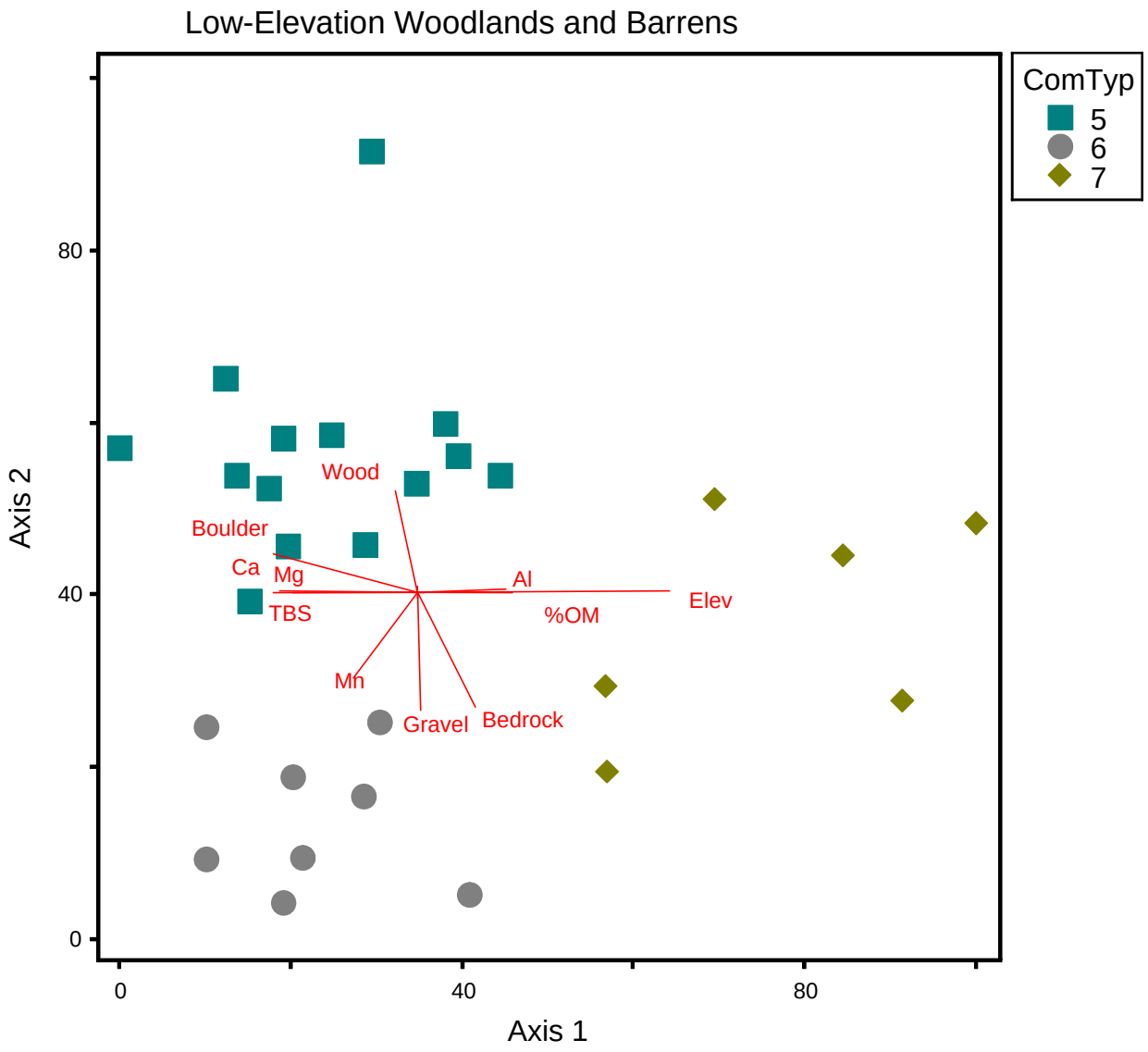
Joint plot vectors show significant correlations between compositional variation and topographic variables ($p = <0.01$). Because soil could not be collected from some plots, no soil chemistry variables are included. See P. 25 for definition of environmental variables.



Scatterplot diagram for two-dimensional NMDS ordination of SHNP basic woodland and outcrop barren plots from which soil could be collected, showing the distribution of community types:

O1 – High-Elevation Greenstone Barren
O3 – High-Elevation Outcrop Barren (Black Chokeberry Igneous/Metamorphic Type)
O5 – Central Appalachian Basic Woodland
O6 – Central Appalachian Circumneutral Barren
O7 – Central Appalachian Mafic Barren (Ninebark/Pennsylvania Sedge Type)

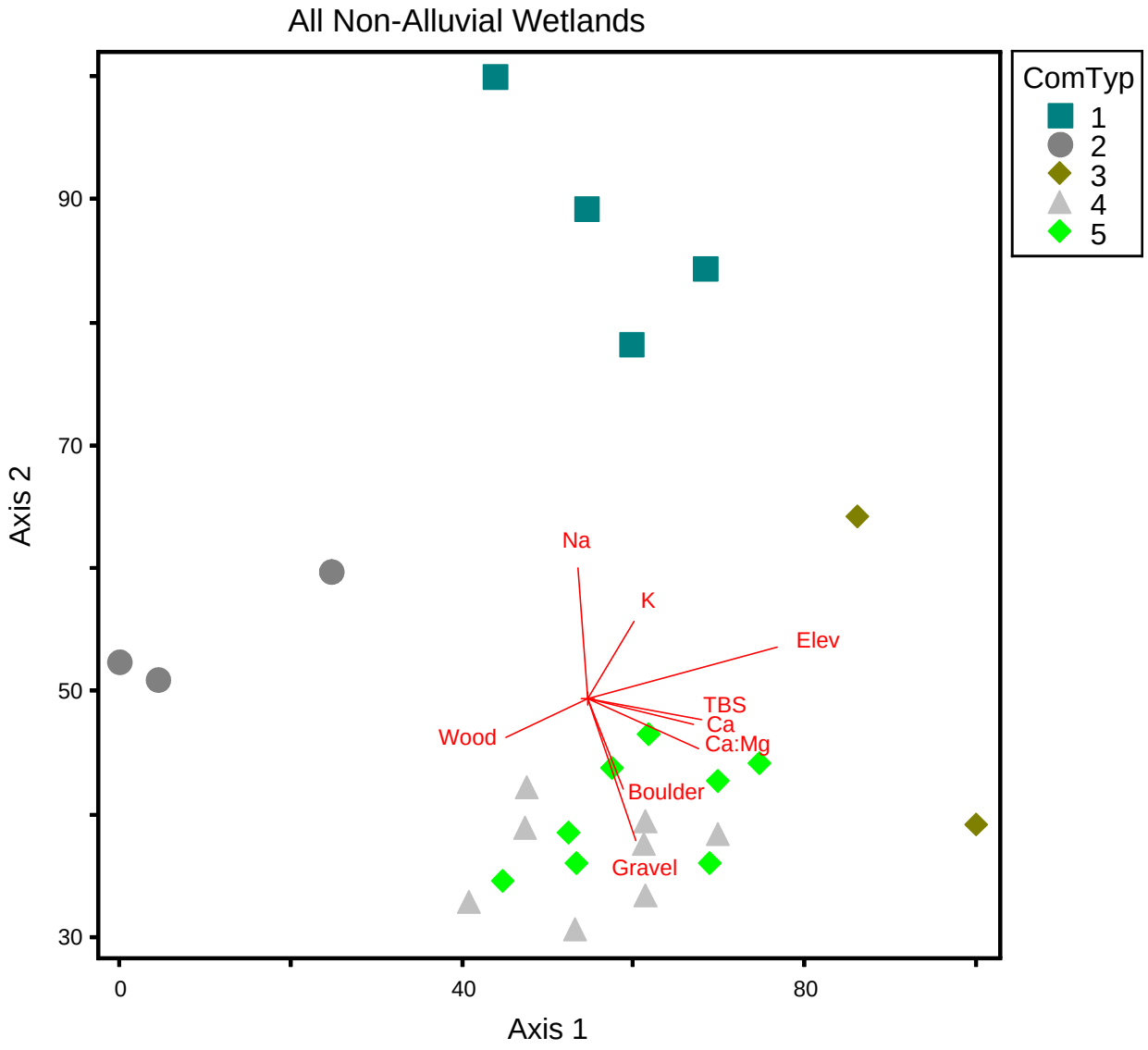
Joint plot vectors show significant correlations between compositional variation and soil/topographic variables (p = <0.01). See P. 25 for definition of environmental variables.



Scatterplot diagram for two-dimensional NMDS ordination of SHNP low-elevation woodland and outcrop barren plots, showing the distribution of community types:

O5 – Central Appalachian Basic Woodland
O6 – Central Appalachian Circumneutral Barren
O7 – Central Appalachian Mafic Barren (Ninebark/Pennsylvania Sedge Type)

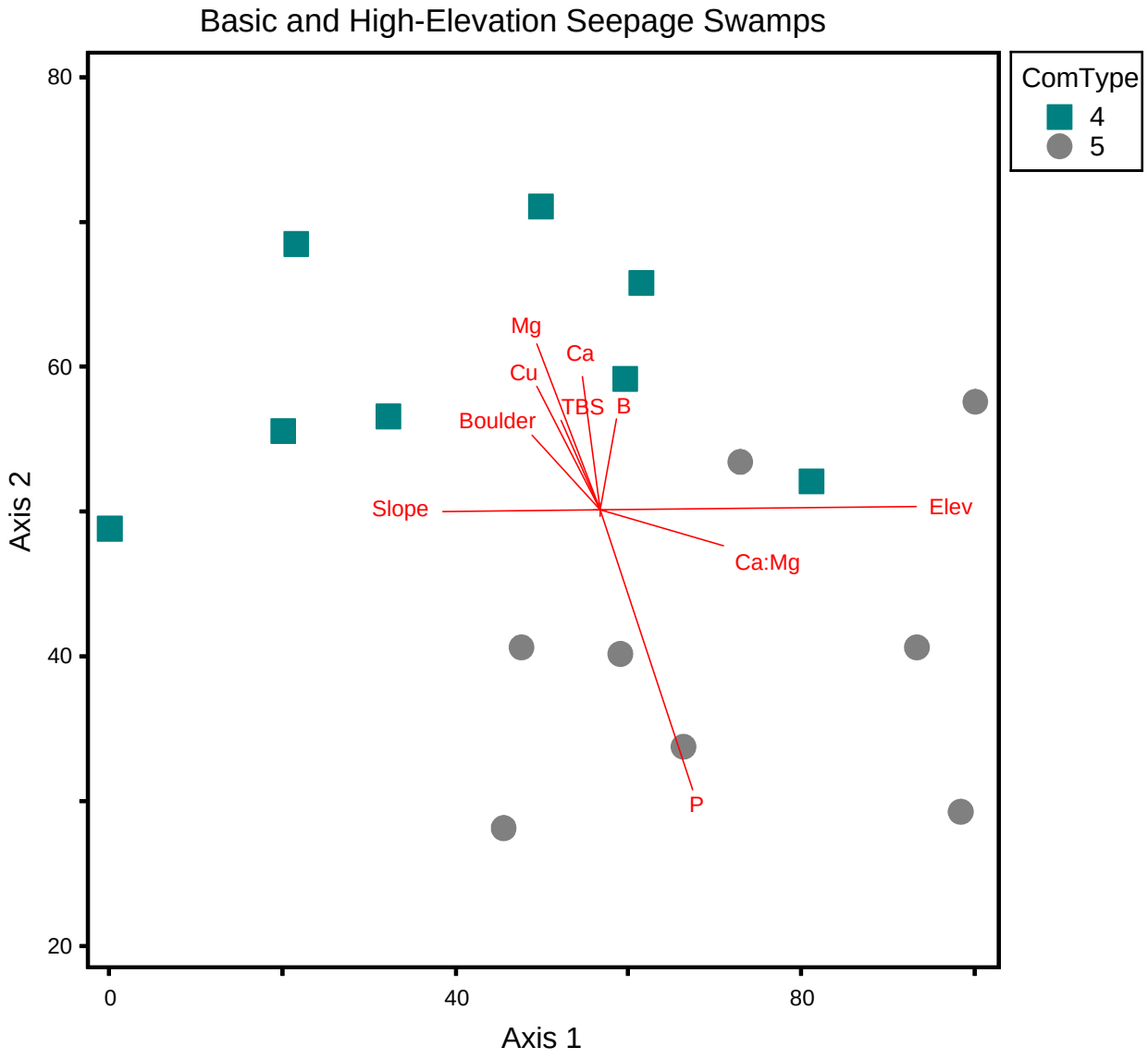
Joint plot vectors show significant correlations between compositional variation and soil/topographic variables ($p = <0.02$). See P. 25 for definition of environmental variables.



Scatterplot diagram for two-dimensional NMDS ordination of all SHNP non-alluvial wetland plots, showing the distribution of community types:

W1 – Northern Blue Ridge Mafic Fen
W2 – Central Appalachian Acidic Seepage Swamp
W3 – Central Appalachian Woodland Seep
W4 – Central Appalachian Basic Seepage Swamp
W5 – High-Elevation Hemlock-Yellow Birch Seepage Swamp

Joint plot vectors show significant correlations between compositional variation and soil/topographic variables (p = <0.05). See P. 25 for definition of environmental variables.



Scatterplot diagram for three-dimensional NMDS ordination of SHNP basic and high-elevation seepage swamp plots, showing the distribution of community types:

W4 – Central Appalachian Basic Seepage Swamp
W5 – High-Elevation Hemlock-Yellow Birch Seepage Swamp

Joint plot vectors show significant correlations between compositional variation and soil/topographic variables (p = <0.10). See P. 25 for definition of environmental variables.

DEFINITIONS OF ENVIRONMENTAL VARIABLES SHOWN IN JOINT PLOT OVERLAYS

%OM – percent organic matter in soil
Al – aluminum (ppm in soil)
B – boron (ppm in soil)
Baspect – Beer's-tranformed aspect (0 to 2; higher values indicate more mesic aspects)
Boulder – surface cover of boulders (%)
Ca – calcium (ppm in soil)
Ca:Mg – calcium to magnesium ratio
CEC – cation exchange capacity
Cu – copper (ppm in soil)
Elev – elevation (m)
Fe – iron (ppm in soil)
Granitic – granitic bedrock (charnockite, layered pyroxene granulite, Old Rag granite, etc.)
Gravel – surface cover of gravel (%)
K – potassium (ppm in soil)
Mafic – metabasalt bedrock
Metased – Chilhowee Group metasedimentary bedrock (quartzite, metasilstone, phyllite)
Mg – magnesium (ppm in soil)
MinSoil – surface cover of exposed mineral soil (%)
Mn – manganese (ppm in soil)
Moss/Lic – surface cover of bryophytes and lichens (%)
Na – sodium (ppm in soil)
P – phosphorus (ppm in soil)
pH – soil reaction
S – soluble sulfer (ppm in soil)
Slope – slope inclination (degrees)
Slshh – horizontal slope shape
Slshv – vertical slope shape
SLSHI – slope shape index (0 to 10; higher values indicate more concave slopes)
TBS – total base saturation
Topos – topographic position (ordinal scale: -1 to 5 [basin/depression to ridge crest)
TRMI – topographic relative moisture index (0 to 60; higher values indicate greater site moisture potential)
Wood – surface cover of decaying wood
Zn – zinc (ppm in soil)